



The Internet and the Consumer Electronics Market

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Product BD*





Agenda

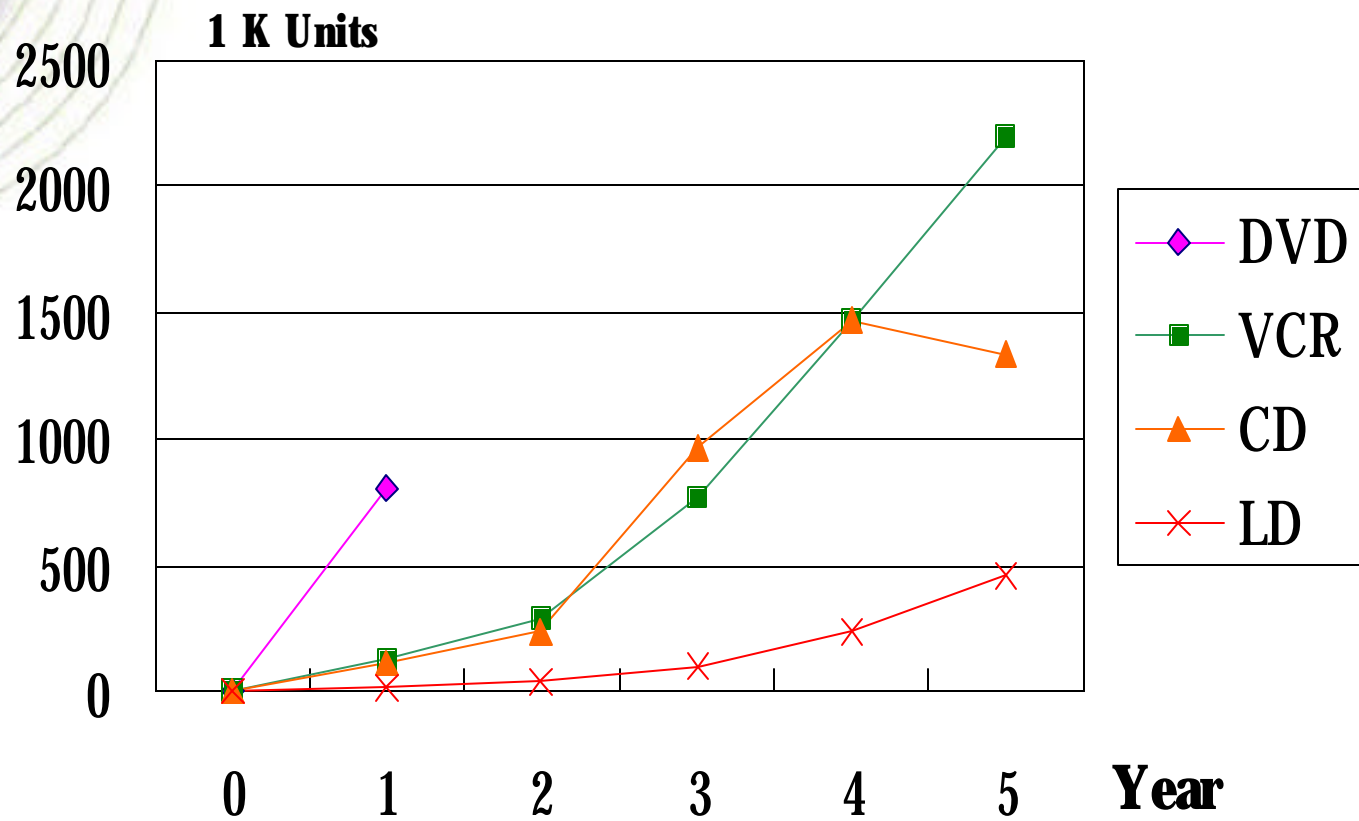
- Consumer Electronics Market Characteristics
- Customer Buying Behaviors
- PC Companies Embrace the CE Market
- DVD Player Anatomy
- CD/DVD PD Primer
- ALi's Vision in CE Market
- Q&A



CE Market Characteristics

- It takes 10+ years to adapt
- Price points and demographics
- Evolutionary
- Different cost & profit model compares to PC market

CE Market Characteristics





Consumer Buying Behavior

- Value
 - Perceived value
- Purchase Decisions
 - One or One+ person buying decision
- Price Points



What is HOT in the CE Market

- Digital Audio and Video
 - DVD player, MP3 player, Digital VCR with Time Shift capability(Tivo..)
- Game Consoles
 - PS2, Dreamcast, Nitendo 64
- PDAs
 - Palms, WinCE (iPAQ...)
- DTV, HDTV ?

PC Companies Embrace CE Market

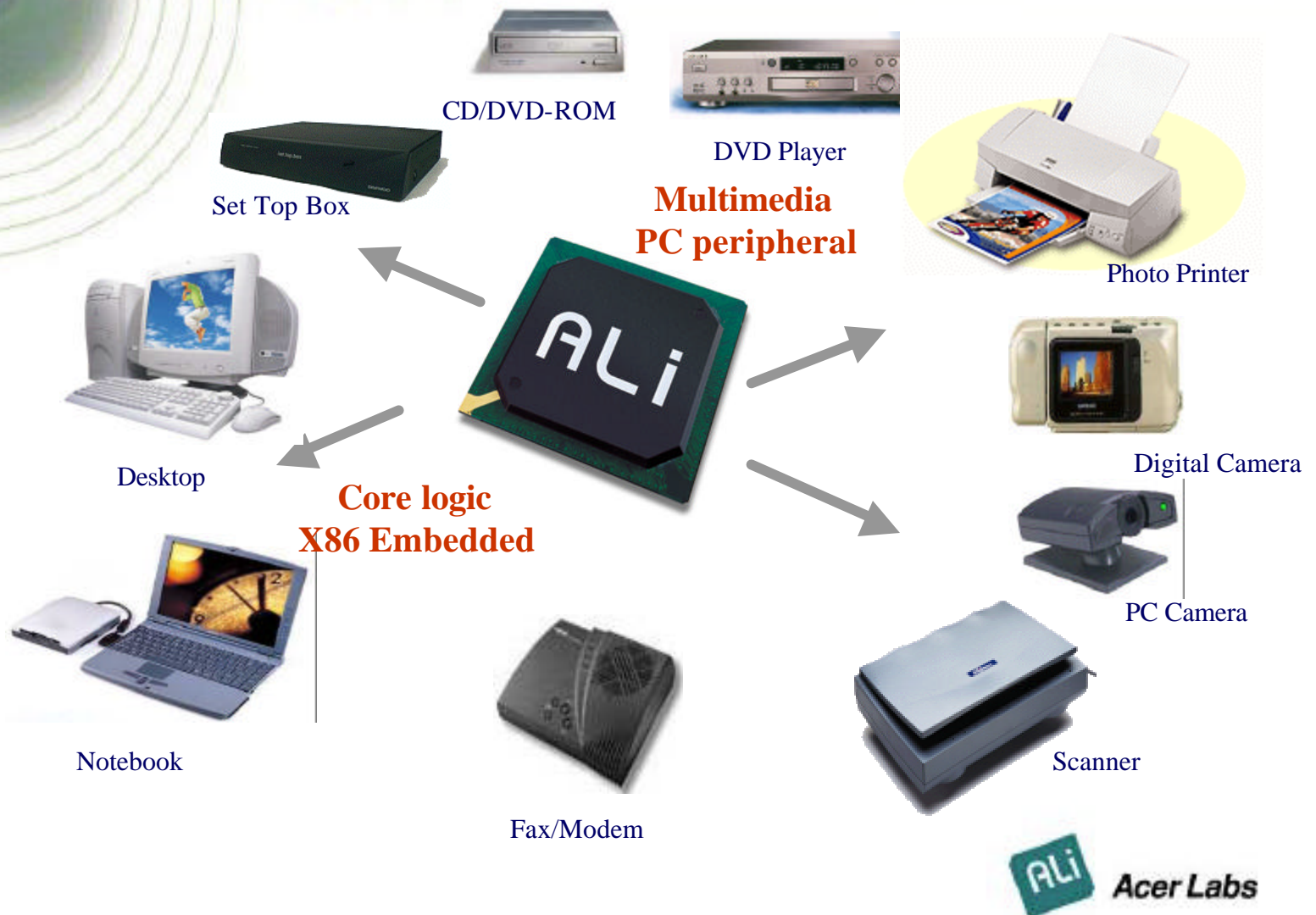
- Microsoft – XBox
- Compaq – iPAQ
- 3COM – Audrey



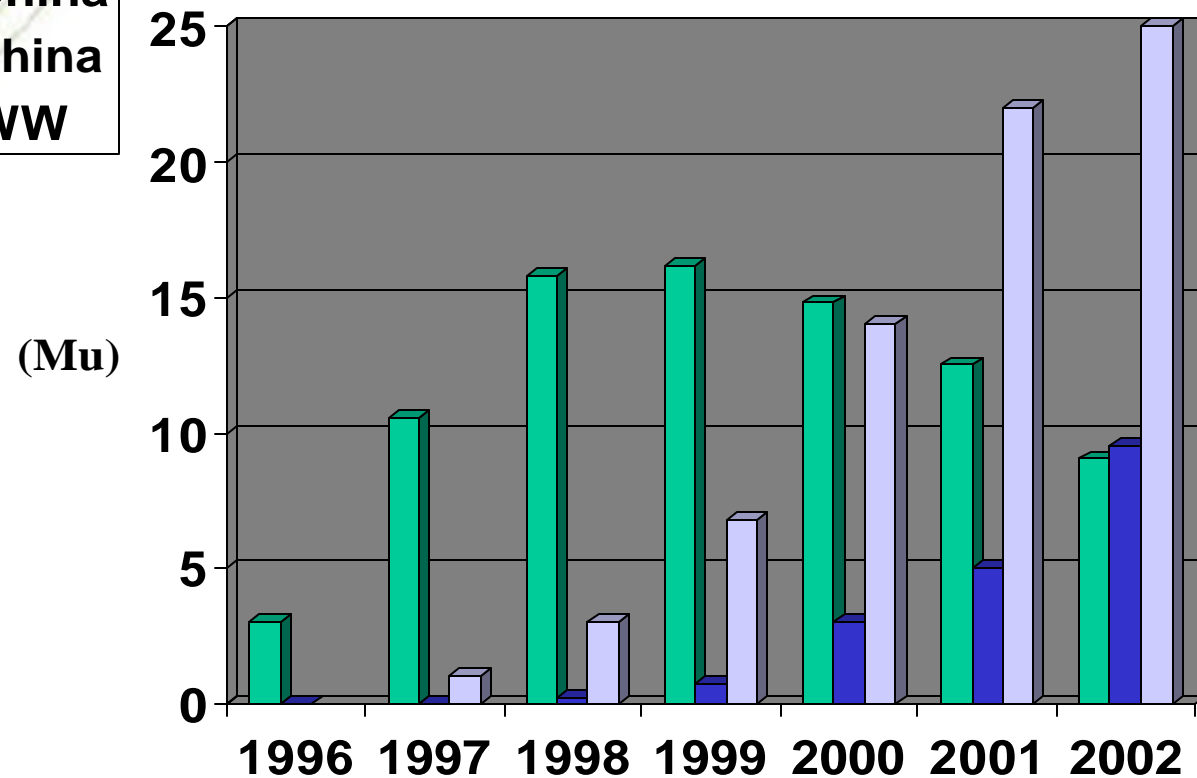
select one of Audrey's
features above to learn more.

Many more to jump into CE Market

Product Profile



VCD/DVD Market & Forecast



Source : In-Stat



DVD Player Market

- Supporting CD/VCD/DVD/MP3 playback
- Market with Increasing Volume
 - DVD in China
 - 4 M units produced in China with 5% household penetration in Yr 2000
 - 10 M units by 2002 (Taiwan Electronic News Dec21,2000)
 - DVD in the rest of the world
 - 15 M units by 2002 (In-Stat)



DVD Player Spec

- Signal System - NTSC (PAL, SECAM)
- Discs format support
 - DVD-video disc
 - Single-sided, single-layer
 - Single-sided, double-layer
 - Double-sided, double-layer (one layer per side)
 - Compact disc (CD-DA, video CD)
 - MP3 disc
- S-video output (YC signal output)
- Component Video Output (RGB or YPrPb)
- Video signal output: 1 Vp-p (with 75ohm load, sync, negative polarity)



DVD Player Spec (continued)

- Audio signal output: 200mV rms (1KHz, -20dB)
- Audio signal output characteristics:
 - DVD linear audio
 - Frequency response:
 - 48kHz sampling; 4 Hz to 22 kHz
 - 96 kHz sampling; 4 Hz to 22 kHz
 - S/N ratio: 106dB
 - Dynamic range: 96dB
 - Wow & Flutter: Below measurable limits
 - Total harmonic distortion: 0.003%
- Dolby 5.1 & DTS support

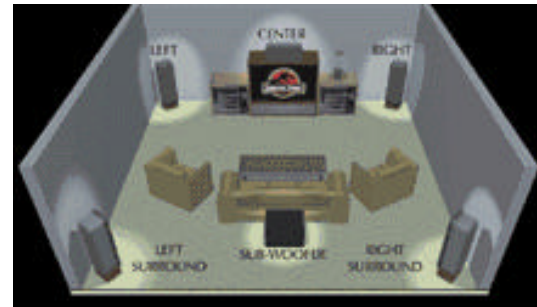


Inside of a DVD Player

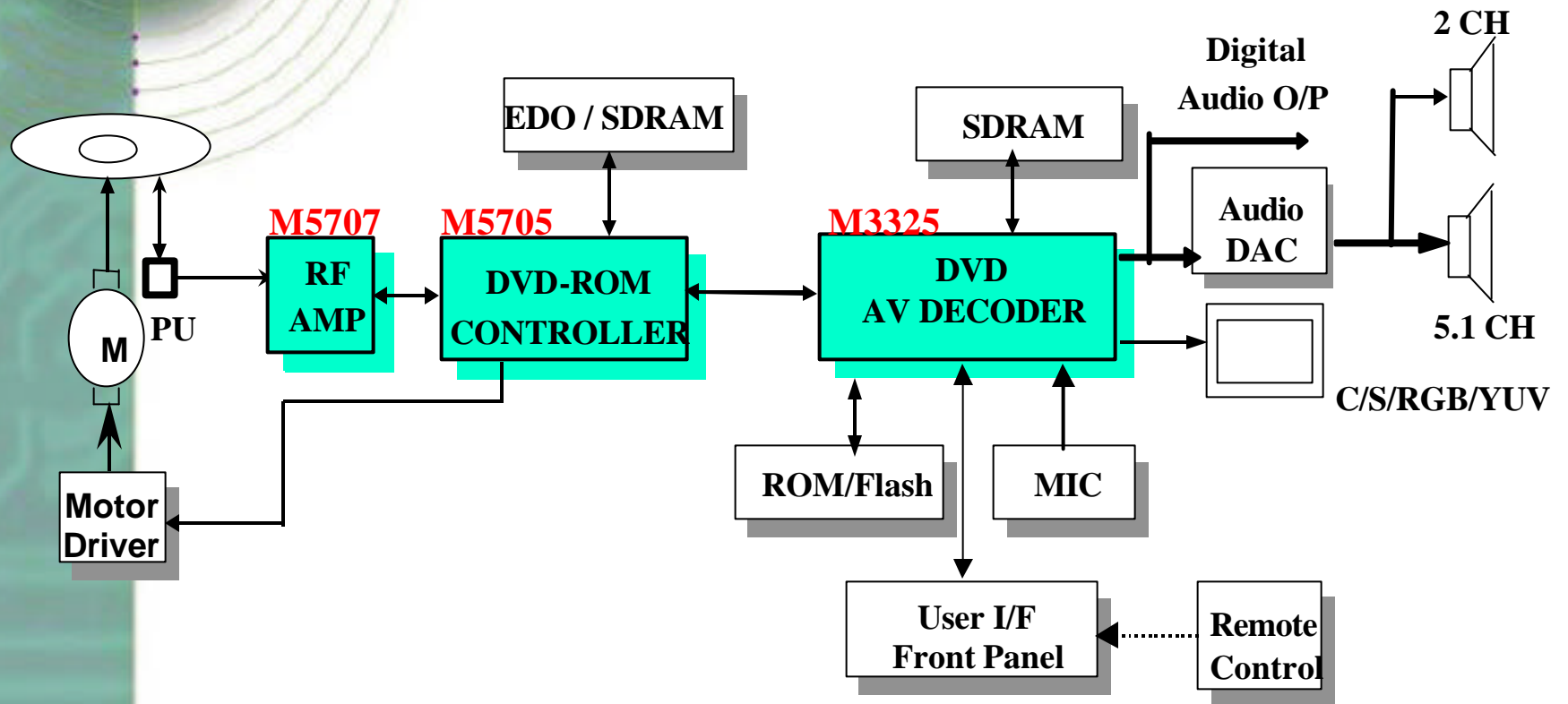
- DVD drive
 - Pickup head assembly; dual lasers – 635nm, 780nm
 - RF AMP
 - Digital processing unit – decode and error correction
 - Buffer memory
 - Embedded micro controller – house keeping
 - Program memory – Flash or ROM
 - Motor control
 - Drive data Interface – ATAPI or others

Inside of a DVD Player

- AV Processor
 - CSS
 - MPEG II video decoder
 - MP3 decoder
 - DSP for Dolby 5.1 and DTS
 - Navigator graphics controller
 - Error concealment
- Progressive Scan processor
- Audio Codec 2 or 5.1 channels
 - 24-bit
- TV encoder
 - Macrovision
- IR remote and panel control



DVD Player Anatomy

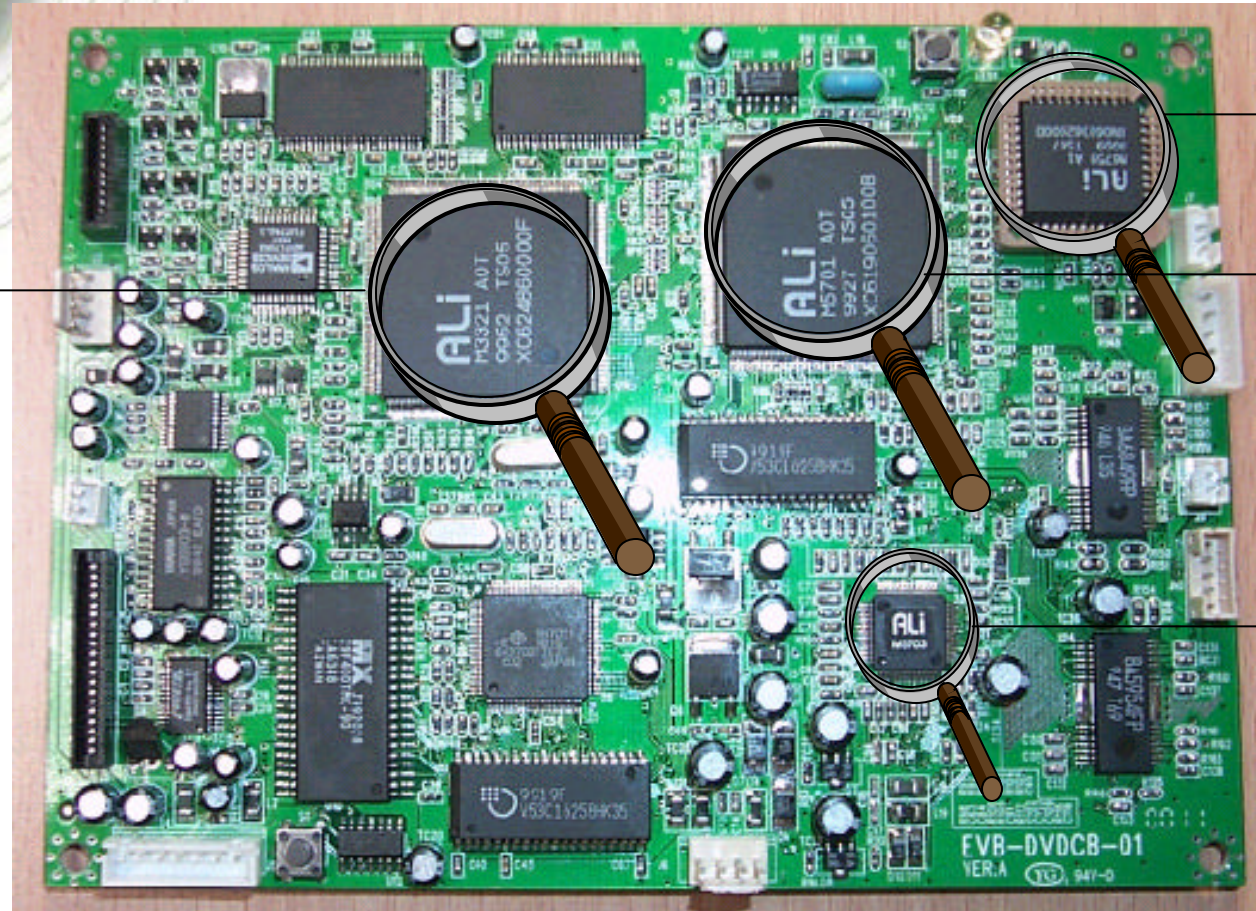


Servo Module

MPEG Module

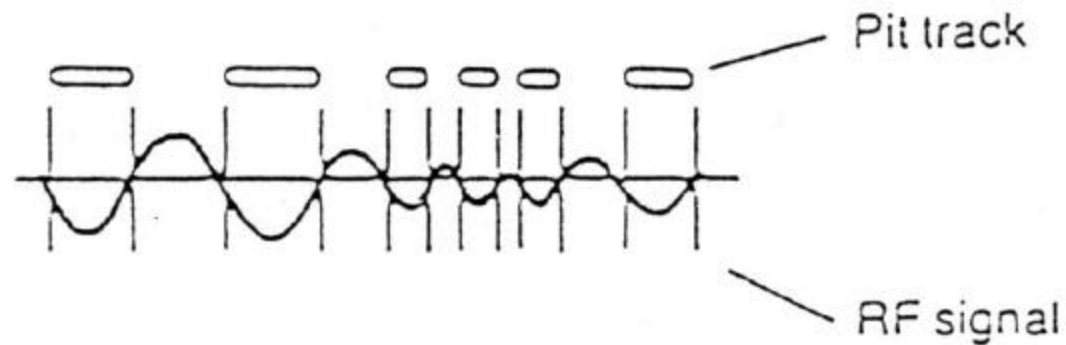
DVD Player Anatomy

DVD AV
Decoder



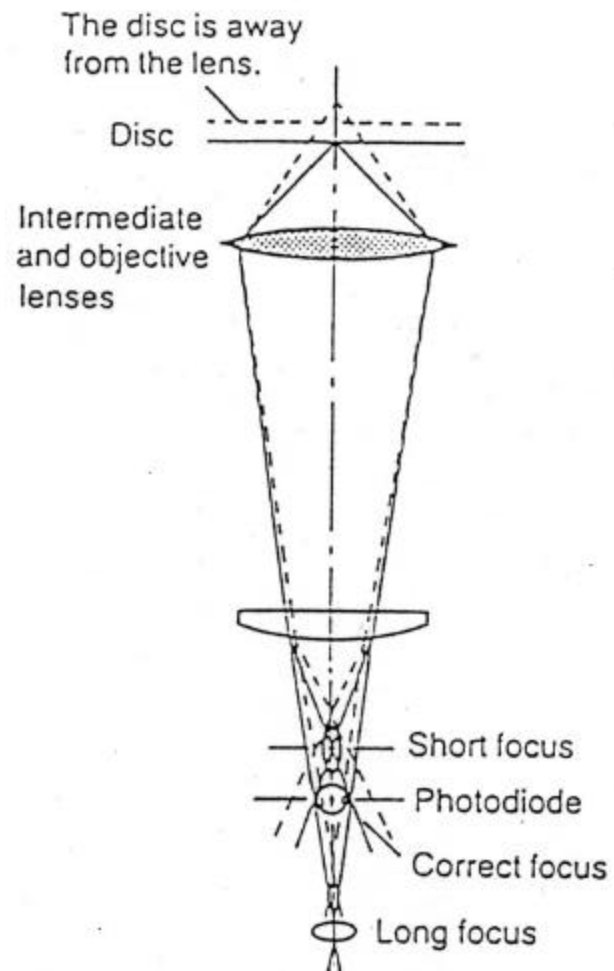
DVD
Servo

CD/DVD PD Primer

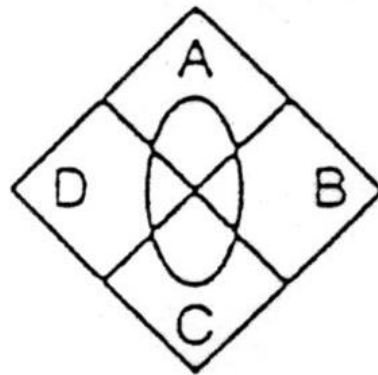


Data pits are used to produce a representative RF signal.

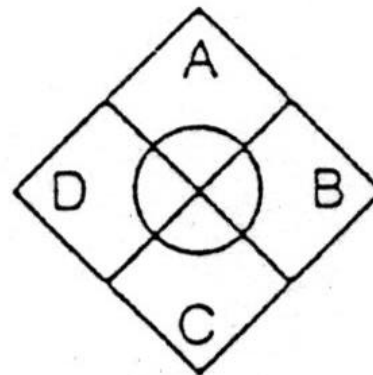
CD/DVD PD Primer



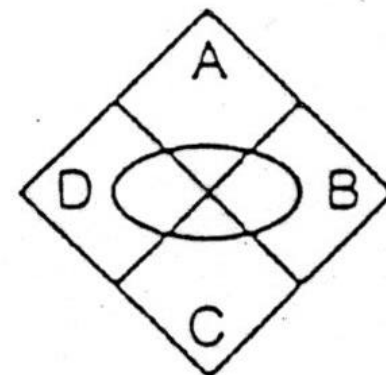
CD/DVD PD Primer



Disc too near

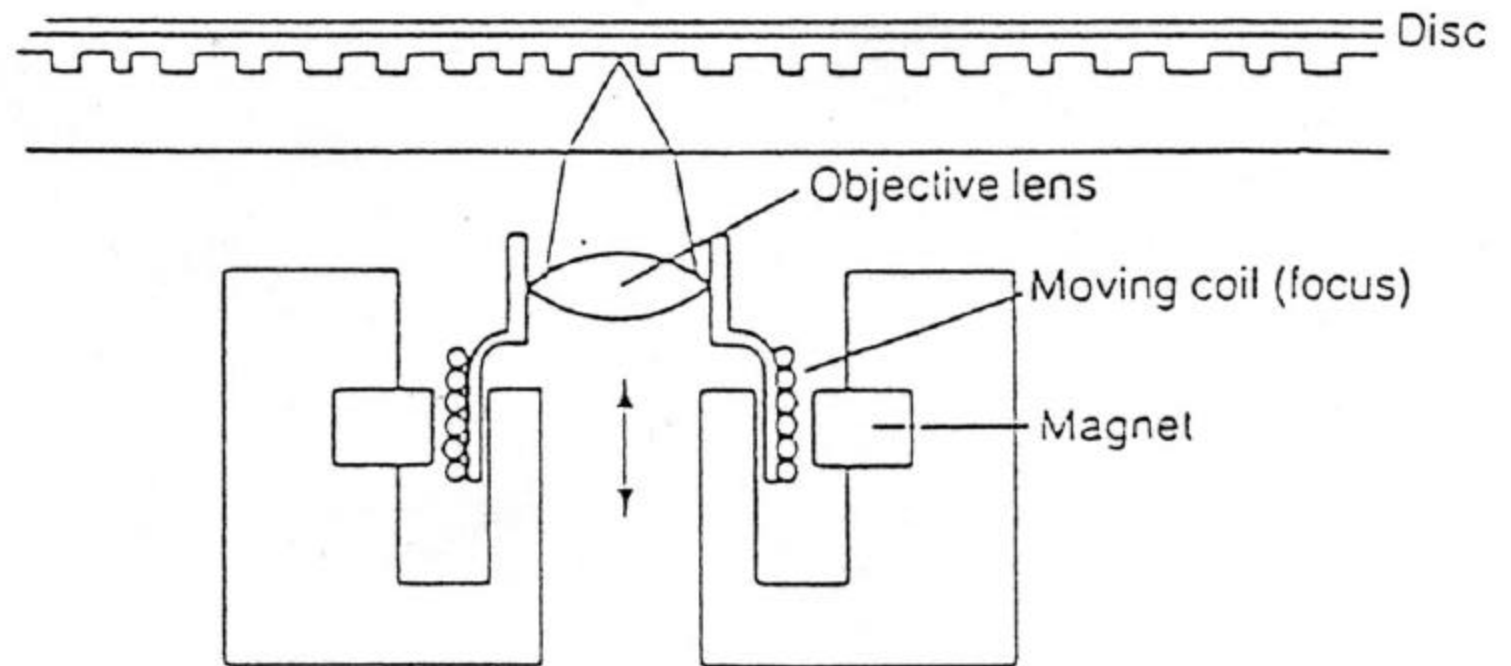


In focus

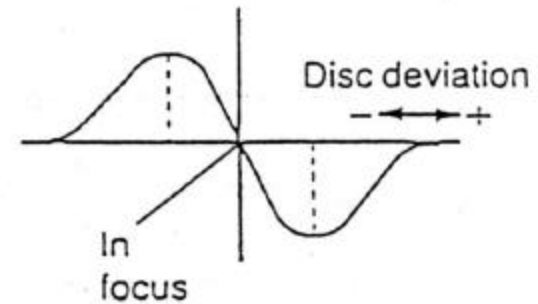
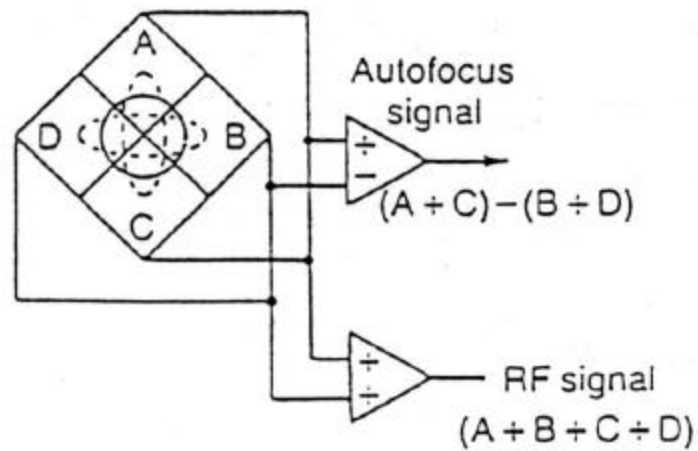


Disc too far

CD/DVD PD Primer



CD/DVD PD Primer





ALi's DVD Chipset Features

- Targeted at DVD Player and DVDROM Markets
 - 20X DVD-ROM and 50X CD-ROM READ
- Built-in high speed read channel circuit
- Built-in high performance digital servo
- Built-in high speed MCU
- Support up to 16Mb DRAM with 16bit bus width.
- Support ATA-100/66/33

ALi's Vision in CE

- Build products support CE VALUE
- Focus on accepted platform – DVD Player
 - Bring Digital Audio/Video experience and value to our customers

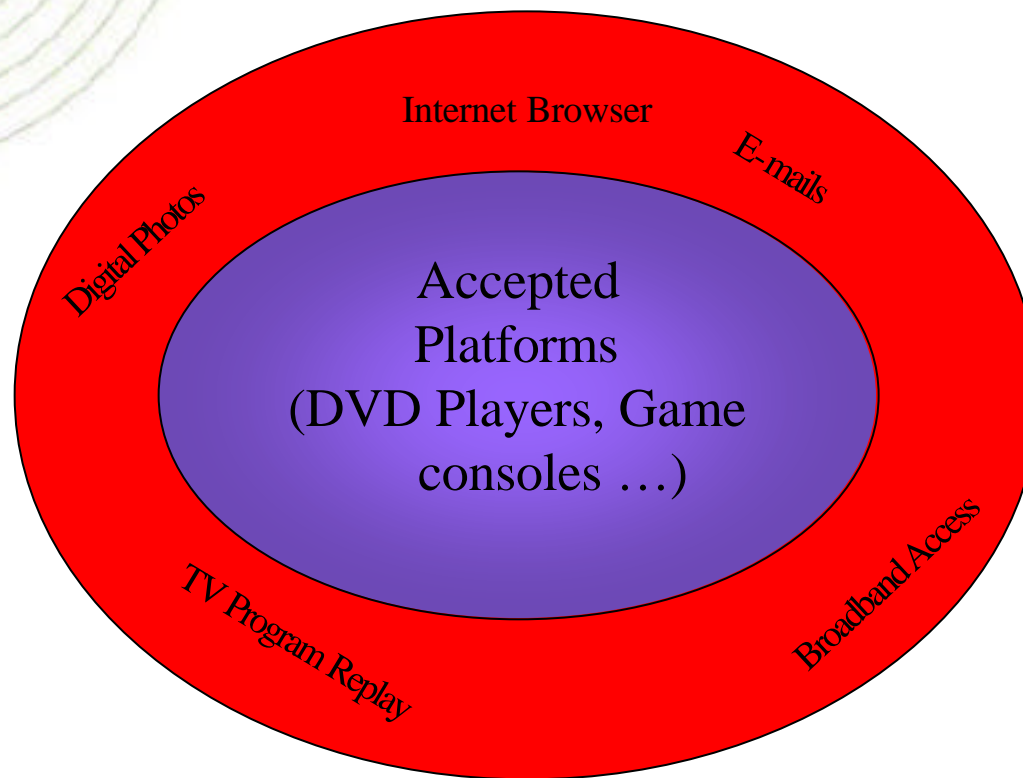




ALi's Vision in CE (continued)

- Embraces Internet connection from Digital Video and Audio processing center – the DVD Player
- Integration, Cost Reduction Success factors in CE market
 - Develop CE specific IPs
 - Leverage existing PC IPs
 - Product feature set tailored to address different demographics
- Partnership
 - In both product and IP arenas

CE and the Internet





Q&A